

PPG HI-TEMP™ 222 G

DESCRIPTION

One-component, high-build multi-polymeric composite heat resistant coating to prevent corrosion of insulated and non-insulated carbon steel and stainless steel to temperatures up to 232°C (450°F) and for cryogenic service on stainless steel from -185°C to 232°C (-300°F to 450°F). Also to be used as a primer with PPG HI-TEMP topcoats and with the PPG HI-TEMP 707 HB or PPG HI-TEMP 808 liquid insulation system.

PRINCIPAL CHARACTERISTICS

- Can be used as a primer with PPG HI-TEMP 500 or 1000 series as a topcoat
- Meets CS-1, CS-3 and CS-4 in NACE SP0198-10 for corrosion under insulation
- Meets SS-1, SS-2 and SS-3 in NACE SP0198-10 for chloride induced stress corrosion cracking
- Can be applied to ambient substrates and to hot substrates having a metal temperature up to 204°C (400°F)
- Resistant to thermal shock and thermal cycling in intermittent (wet, dry, wet) service
- Forms a superior corrosion resistant system when applied over properly prepared surfaces
- Surface tolerant
- Single coat application

COLOR AND GLOSS LEVEL

- Dark gray
- Flat

BASIC DATA AT 20°C (68°F)

Data for product	
Number of components	One
Mass density	1.8 kg/l (15.1 lb/US gal)
Volume solids	63 ± 2%
VOC (Supplied)	Directive 1999/13/EC, SED: max. 265.0 g/kg max. 372.0 g/l (approx. 3.1 lb/US gal)
Temperature resistance (Continuous)	To 232°C (450°F)
Temperature resistance (Intermittent)	To 260°C (500°F)
Cryogenic service	-185°C (-300°F) to 232°C (450°F)
Recommended dry film thickness	200 - 250 µm (8.0 - 10.0 mils) depending on system
Theoretical spreading rate	3.2 m ² /l for 200 µm (126 ft ² /US gal for 8.0 mils)
Dry to touch	2 hours
Dry to topcoat	18 hours
Dry to handle	24 hours



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Data for product

Shelf life

At least 18 months when stored cool and dry

Notes:

- See ADDITIONAL DATA – Spreading rate and film thickness
- See ADDITIONAL DATA – Overcoating intervals
- See ADDITIONAL DATA – Curing time

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Carbon steel

- Surface to be coated should be dry and free of all weld splatter, oil, dirt, grease, and all other contaminants, especially salts. Round off all rough welds and sharp edges. Dry abrasive blast clean to an SSPC-SP 6, “Commercial Blast” (ISO-Sa 2) with a 38 to 63 µm (1.5 to 2.5 mils) profile. Wet abrasive blast or UHP wash with grit injection to achieve an equivalent of a SSPC SP 6 (ISO-Sa 2).

Note: If abrasive blast preparation is not possible, use SSPC-SP15, commercial grade power tool cleaning with minimum 25 µm (1.0 mil) profile

Galvanized, stainless steel and non-ferrous metals

- All surfaces to be coated with PPG HI-TEMP 222 G shall be free of all weld splatter, oil, dirt, grease, and all other contaminants, especially salts. Round off all rough welds and sharp edges.
- Lightly abrasive blast in accordance with SSPC SP-16 requirements or otherwise abrade the surface to ensure a uniform and dense surface profile of at least 1.0 mil (25 µm)

Note: Do not use chlorinated solvents on stainless steel surfaces

Non-insulated and insulated surfaces

- Small surfaces may be cleaned with a chlorinated-free solvent. Large surfaces may be cleaned utilizing a high- or low-pressure wash or steam cleaning with an alkaline detergent, followed by a freshwater rinse. Water used should be potable grade or better and should be checked to assure minimal salt content. Do not use any chemical additives in the rinse water
- An anchor profile is not mandatory for adhesion of PPG HI-TEMP 222 G on stainless steel surfaces. As an option, following cleaning, a light abrasive sweep blast using an appropriate chloride-free abrasive may be performed. After completion of this mechanical surface preparation, rinse the surface with potable grade water or better. Always allow rinsed surfaces to dry before coating.

Substrate temperature

- Substrate temperature during application should be between 10°C (50°F) and 66°C (150°F)
- Substrate temperature during application should be at least 3°C (5°F) above dew point
- Application to hot substrate: should be above 66°C (150°F) and below 204°C (400°F)



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SYSTEM SPECIFICATION

Under insulation ambient or hot application (66°C (150°F) to 204°C (400°F)) – one coat

- PPG HI-TEMP 222 G: 200 to 250 µm (8.0 to 10.0 mils) DFT
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Under insulation ambient or hot application (66°C (150°F) to 204°C (400°F)) – two coats

- PPG HI-TEMP 222 G: 100 to 125 µm (4.0 to 5.0 mils) DFT
- PPG HI-TEMP 222 G: 100 to 125 µm (4.0 to 5.0 mils) DFT

Notes:

- A minimum of 200 µm (8.0 mils) shall be applied for protection against Corrosion Under Insulation (CUI)
 - Maximum temperature resistance for under insulation is 232°C (450°F) with intermittent temperature resistance to 260°C (500°F)
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Primer / topcoat system ambient or hot application (66°C (150°F) to 149°C (300°F))

- PPG HI-TEMP 222 G: 150 to 200 µm (6.0 to 8.0 mils)
 - PPG HI-TEMP 500 or 1000 series : 50 to 63 µm (2.0 to 2.5 mils)
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Primer / topcoat system hot application from 149°C (300°F) to 204°C (400°F)

- PPG HI-TEMP 222 G: 125 to 150 µm (5.0 to 6.0 mils)
 - PPG HI-TEMP 500 or 1000 series : 50 to 63 µm (2.0 to 2.5 mils)
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Primer / Liquid Insulation system

- PPG HI-TEMP 222 G: 150 to 200 µm (6.0 to 8.0 mils)
 - PPG HI-TEMP 707 HB: 1000 to 1250 µm (40.0 to 50.0 mils) DFT per layer
 - PPG HI-TEMP 808 : 375 to 500 µm (15.0 to 20.0 mils) DFT per layer
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INSTRUCTIONS FOR USE

- PPG HI-TEMP 222 G is a heavy bodied material; use mechanical agitation for mixing immediately before application and as needed during application. Be sure any settled solids are incorporated during mixing.
 - If a condition warrants thinning, only PPG thinners should be used and in accordance with applicable regulations.
 - It is essential to apply multiple thin passes of PPG HI-TEMP 222 G during application to hot steel. This process, similar to mist coating, prevents blistering and also allows solvent to escape without leaving pinholes. Use of a solvent other than THINNER 21-25 could produce a fire hazard, and dry spray and poor film characteristics may also result. If blisters are observed in PPG HI-TEMP 222 G applied to hot surfaces, immediately brush out the blisters before they set, using a wood handled China bristle brush. Note that the higher the substrate temperature, the shorter the recoat time.
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PPG HI-TEMP™ 222 G

Air spray

Recommended thinner - application to ambient substrate below 66°C (150°F)

- THINNER 21-06
- THINNER 91-10 (VOC compliant)

Recommended thinner - application to hot substrate at 66°C (150°F) up to 204°C (400°F)

- THINNER 21-25

Volume of thinner

Ambient application: 0 - 5%; Hot application: 0 - 10%, depending on required thickness and application conditions

Nozzle orifice

1.8 - 2.2 mm (approx. 0.070 - 0.087 in)

Nozzle pressure

0.4 - 0.6 MPa (approx. 4 - 6 bar; 58 - 87 p.s.i.)

Airless spray

Recommended thinner - application to ambient substrate below 66°C (150°F)

- THINNER 21-06
- THINNER 91-10 (VOC compliant)

Recommended thinner - application to hot substrate at 66°C (150°F) up to 204°C (400°F)

- THINNER 21-25

Volume of thinner

Ambient application: 0 - 5%; Hot application: 0 - 10%, depending on required thickness and application conditions

Nozzle orifice

Approx. 0.48 - 0.53 mm (0.019 - 0.021 in)

Nozzle pressure

5.2 - 8.3 MPa (approx. 52 - 83 bar; 754 - 1204 p.s.i.)



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Brush/roller

Recommended thinner - application to ambient substrate below 66°C (150°F)

- THINNER 21-06
- THINNER 91-10 (VOC compliant)

Recommended thinner - application to hot substrate at 66°C (150°F) up to 204°C (400°F)

- THINNER 21-25

Volume of thinner

Ambient application: 0 - 5%; Hot application: 0 - 10% can be added if desired

Note: Spray application is recommended but when spray painting is not possible, brush or roller is an appropriate application method. The coating should be applied with a suitable brush or short nap roller. Brushing and rolling in one direction may aid in building film thickness.

Cleaning solvent

- THINNER 21-06, 21-25 or 91-10

ADDITIONAL DATA

Spreading rate and film thickness	
DFT	Theoretical spreading rate
100 µm (4.0 mils)	6.3 m ² /l (253 ft ² /US gal)
125 µm (5.0 mils)	5.0 m ² /l (202 ft ² /US gal)
200 µm (8.0 mils)	3.2 m ² /l (126 ft ² /US gal)
250 µm (10.0 mils)	2.5 m ² /l (101 ft ² /US gal)

Overcoating interval for DFT up to 200 µm (8.0 mils)				
Overcoating with...	Interval	10°C (50°F)	20°C (68°F)	>150°C (300°F)
PPG HI-TEMP 500 or 1000 series	Minimum	18 hours	18 hours	N/A
	Maximum	3 months	3 months	3 months
itself	Minimum	18 hours	6 hours	N/A
	Maximum	3 months	3 months	3 months

Note: Do not exceed recommended dry film thickness when applying to un-insulated steel

Curing time for DFT up to 250 µm (10.0 mils)		
Substrate temperature	Dry to touch	Dry to handle/ship
10°C (50°F)	4 hours	48 hours
20°C (68°F)	2 hours	24 hours



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SAFETY PRECAUTIONS

- The product is for use only by professional applicators in accordance with information in this product data sheet and the applicable material safety data sheet (MSDS). Refer to the appropriate MSDS before using this material. All use and application of this product should be performed in compliance with all relative federal, state and local, health, safety and environmental regulations or in compliance with all pertinent local, regional and national regulations as well as good safety practices for painting, and in conformance with recommendations in SSPC PA 1, "Shop, Field and Maintenance Painting of Steel."

WORLDWIDE AVAILABILITY

It is always the aim of PPG Protective and Marine Coatings to supply the same product on a worldwide basis. However, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

REFERENCES

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|--------------------------------------|-------------------|------|
| • CONVERSION TABLES | INFORMATION SHEET | 1410 |
| • EXPLANATION TO PRODUCT DATA SHEETS | INFORMATION SHEET | 1411 |

WARRANTY

PPG warrants (i) its title to the product, (ii) that the quality of the product conforms to PPG's specifications for such product in effect at the time of manufacture and (iii) that the product shall be delivered free of the rightful claim of any third person for infringement of any U.S. patent covering the product. THESE ARE THE ONLY WARRANTIES THAT PPG MAKES AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES, UNDER STATUTE OR ARISING OTHERWISE IN LAW, FROM A COURSE OF DEALING OR USAGE OF TRADE, INCLUDING WITHOUT LIMITATION, ANY OTHER WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR USE, ARE DISCLAIMED BY PPG. Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life of the product, or one year from the date of the delivery of the product to the Buyer, whichever is earlier. Buyer's failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

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